

ABSTRACT

An optical module has multiple optical devices. At least two of the multiple optical devices are a group. Each of the optical devices in the group are individually selectable relative to the others. The optical module also has a controller, coupled to the devices such that the controller can select which of the devices in the group will be active at a given time.

A method of creating an optical chip, having redundant devices, for use in an opto-electronic unit involves growing active portions of multiple optical devices on a wafer, processing the wafer to create complete optical devices, creating individual optical devices, grouping the devices; and connecting the devices in a group to a control circuit such that, common data can be received by any of the devices in the group but the common data will only be handled by the device in the group that is active.

A communications network has a first transmitter having a number of usable channels, a first receiver, and optical fibers connecting the first transmitter to the first receiver. The first transmitter has multiple lasers, at least some being selectable as either active or backup lasers. The multiple lasers are controllable such that, if a specific channel is in use by an active laser and a laser failure occurs for that channel, a redundant laser can be substituted for the active laser and, after the substitution, the specific channel can be used using the redundant laser.